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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/535,066

03/15/2006

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1101.146WOUS

1843

24113 7590 02/26/2010
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EXAMINER

BERNS, DANIEL J

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

02/26/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/535,066	Applicant(s) RYTTER ET AL.	
	Examiner DANIEL BERNS	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 November 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 8-57 is/are pending in the application.
- 4a) Of the above claim(s) 19-57 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 8-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 10 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Parthasarathy, US 3,933,883 (1976). Regarding claims 1 and 16, Parthasarathy discloses a catalyst comprising Co on an Al₂O₃ support, wherein the impregnated, calcined carrier (i.e., the final catalyst) has an average particle size of 40-250 μm, a specific surface area of 100-200 m²/g (125-175 m²/g being preferred), an average pore size of 50-180 Å (100-115 Å being preferred), and a pore volume of 0.25-0.7 cc/g. *See* Parthasarathy at col. 1, ln. 53-57, col. 2, ln. 13-23, and col. 2, ln. 67 to col. 3, ln. 7; Tables 1-2; clms. 1, 3 and 4. Said values touch and/or overlap the claimed ranges, rendering the latter *prima facie* anticipated thereby. *See, e.g., Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (internal citations omitted); MPEP 2131.03.

Regarding claim 2, various specific surface areas within the claimed range are disclosed. *See id.* at Tables 1-2.

Regarding claim 3, Parthasarathy's disclosed particle size range of 40-250 μm partially overlaps that claimed and also touches the latter's endpoint, rendering the claim *prima facie* anticipated thereby. *See id.* at col. 3, ln. 2-3; clm. 4; *Titanium Metals*; MPEP 2131.03.

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Regarding claims 4 and 5, Parthasarathy's disclosed pore diameter range of 50-180 Å partially overlaps that claimed, rendering the latter *prima facie* anticipated thereby. *See id.* at col. 3, ln. 4-6; *Titanium Metals*; MPEP 2131.03.

Regarding claim 10, Parthasarathy employs γ -alumina as its catalyst carrier. *See id.* at abstract; col. 3, ln. 26-30.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. In considering the obviousness rejections below, the applicant should note that the person having ordinary skill in the art has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in the application reasonably reflect this level of skill.

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7. Claims 1-5 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parthasarathy in view of Hansford, US 3,988,263 (1976). Regarding claims 1-5 and 16, Parthasarathy's teachings are as above. Regarding claim 13, the difference between Parthasarathy and the claim is that Parthasarathy fails to disclose the inclusion of a binder in its alumina support. This limitation, however, is taught by Hansford.

Hansford teaches the production of calcined, alumina-supported cobalt catalysts, wherein the support contains a binder to improve the catalysts' pellet strength and thermal stability. *See* Hansford at col. 1, ln. 54-62, col. 2, ln. 64-67, and col. 3, ln. 59-66; Ex. 10. Given that Hansford and Parthasarathy's disclosures similarly relate to the formation of alumina-supported cobalt catalysts, and Hansford's teaching that the inclusion of a binder within the support material yields improved catalyst structural and thermal stability, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Parthasarathy's supported catalyst by including a binder material therein as taught by Hansford, due to Hansford's taught motivation of improved catalyst stabilities as discussed above.

Regarding claims 14-15, Hansford teaches alumina hydrogels or hydrosols as its binder materials, said material(s) being present within Hansford's alumina support in amounts of 10-25 wt. %, rendering the claimed range *prima facie* obvious. *In re Wertheim*; MPEP § 2144.05.

8. Claims 1-5, 10-12 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parthasarathy in view of Singleton et al., US 6,255,358 (2001) ("Singleton"). Regarding claims 1-5, 10 and 16, Parthasarathy's teachings are as above. Regarding claims 11 and 12, the difference between the claims and Parthasarathy is that the latter fails to disclose the use of La as

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a stabilizing agent for its γ - Al_2O_3 catalyst carrier. This limitation, however, is taught by Singleton.

Singleton teaches the doping of its γ -alumina supported Co catalysts with La to provide the support with increased thermal stability. *See* Singleton at col. 3, ln. 51-56, col. 4, ln. 8-25, 30, and 45-54, and col. 10, ln. 11-15. Singleton teaches that such La-doping of the alumina carrier not only increases the latter's thermal stability, but also increases the catalyst's activity for Fischer-Tropsch ("F-T") syntheses without negatively affecting its selectivity therein. *See id.* at col. 10, ln. 11-15. Hence, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Parthasarathy's catalyst composition by employing a La stabilizer as taught by Singleton, due to Singleton's taught advantage of the increased stability and activity afforded thereby.

Regarding claims 17 and 18, Singleton teaches ~20-45 wt. % Co in its catalysts, with a 20 wt. % Co value specifically taught. *See id.* at col. 4, ln. 34-41 and col. 8, ln. 13-14.

9. Claims 1-5, 8, 9 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulaskey, US 4,102,822 (1978). Regarding claims 1-5 and 16, Mulaskey teaches a catalyst comprising Co on Al_2O_3 carrier, wherein the calcined carrier has a specific surface area of 115-200 m^2/g , an average pore size of 80-150 Å, and a pore volume of 0.5-0.85 cc/g prior to impregnation. *See* Mulaskey at col. 3, ln. 63 to col. 4, ln. 13. After impregnation, the $\text{Co}/\text{Al}_2\text{O}_3$ is pulverized to a mixture of particles having an average diameter of $<\sim 150\mu\text{m}$, overlapping the claimed ranges. *See id.* at col. 4, ln. 14-16.

While Mulaskey's carrier characteristics are measured prior to Co impregnation, Mulaskey teaches that the carrier's surface area and pore volume will only decrease by 5-30%

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after impregnation, with little to no effect on the pore size distribution. *See id.* at col. 4, ln. 16-24. Hence, even after impregnation with Co, Mulaskey's values will still partially or significantly overlap those claimed, rendering the latter *prima facie* obvious. *See, e.g., In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976) (holding that a *prima facie* case of obviousness exists where claimed ranges "overlap or lie inside ranges disclosed by the prior art"); MPEP § 2144.05.

Regarding claims 8 and 9, Mulaskey teaches the appropriateness of adding 0.1-10 wt. % promoter material such as Re to its supported catalyst, at least partially overlapping and rendering *prima facie* obvious the claimed range. *See id.* at col. 13, ln. 36-41; *In re Wertheim*; MPEP 2144.05.

10. Claims 1-5, 8, 9, and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulaskey in view of Hansford. Regarding claims 1-5, 8, 9, and 16, Mulaskey's teachings are as above. Regarding claim 13, the difference between Mulaskey and the claim is that Mulaskey fails to disclose the inclusion of a binder in its alumina support. This limitation, however, is taught by Hansford.

Hansford teaches the production of calcined, alumina-supported cobalt catalysts, wherein the support contains a binder to improve the catalysts' pellet strength and thermal stability. *See* Hansford at col. 1, ln. 54-62, col. 2, ln. 64-67, and col. 3, ln. 59-66; Ex. 10. Given that Hansford and Mulaskey's disclosures similarly relate to the formation of alumina-supported cobalt catalysts, and Hansford's teaching that the inclusion of a binder within the support material yields improved catalyst structural and thermal stability, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Mulaskey's supported catalyst by

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including a binder material therein as taught by Hansford, due to Hansford's taught motivation of improved catalyst stabilities as discussed above.

Regarding claims 14-15, Hansford teaches alumina hydrogels or hydrosols as its binder materials, said material(s) being present within Hansford's alumina support in amounts of 10-25 wt. %, rendering the claimed range *prima facie* obvious. *In re Wertheim*; MPEP § 2144.05.

11. Claims 1-5, 8-12 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulaskey in view of Singleton. Regarding claims 1-5, 8, 9, and 16, Mulaskey's teachings are as above. Regarding claim 10, the difference between Mulaskey and the claim is that Mulaskey fails to disclose γ -alumina as its catalyst carrier. This limitation, however, is taught by Singleton.

Singleton teaches that γ -alumina is the most commonly employed form of alumina for use with Co-based Fischer-Tropsch ("F-T") catalysts, employed at least in part for its higher surface area when compared to the δ , θ , and α forms thereof. *See* Singleton at col. 3, ln. 16-31. Singleton's own Co-based F-T catalysts preferably employ γ -alumina supports. *See id.* at col. 4, ln. 8-25. Given Singleton's motivational statement of the desirability of employing γ -alumina carriers for Co-based F-T catalysts for such reasons as greater surface areas than other alumina forms, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Mulaskey's Co/Al₂O₃ catalyst by employing γ -alumina as the support therefor.

Regarding claims 11 and 12, Singleton teaches the doping of its γ -alumina supported Co catalysts with La to provide the support with increased thermal stability. *See* Singleton at col. 3, ln. 51-56, col. 4, ln. 8-25, 30, and 45-54, and col. 10, ln. 11-15. Singleton teaches that such La-doping of the alumina carrier not only increases the latter's thermal stability, but also increases

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the catalyst's activity for Fischer-Tropsch ("F-T") syntheses without negatively affecting its selectivity therein. *See id.* at col. 10, ln. 11-15.

Regarding claims 17 and 18, Singleton teaches ~20-45 wt. % Co in its catalysts, with a 20 wt. % Co value specifically taught. *See id.* at col. 4, ln. 34-41 and col. 8, ln. 13-14.

Response to Arguments

12. Applicant's 6/26/09, 8/12/09, and 11/30/09 arguments with respect to the rejections based in whole or in part upon Espinoza et al., EP 0736326 A1, and Hu et al., WO 02/089978, have been fully considered and are persuasive, especially in light of applicant's claim amendments and the Declaration of Sigrid Eri. Therefore, said rejections have been withdrawn. However, upon further consideration, the foregoing new grounds of rejection are made in view of applicant's claim amendments.

13. Applicant should note that the recitation "for use in a Fischer-Tropsch synthesis reaction" has not been given patentable weight because the recitation occurs in claim 1's preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. *See In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. *See* MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A

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shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL BERNIS whose telephone number is (571)270-5839. The examiner can normally be reached on Monday thru Thursday, 9AM-6PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached at (571)272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. B./ February 24, 2010

Examiner, Art Unit 1793

/Timothy C Vanoy/

Primary Examiner, Art Unit 1793